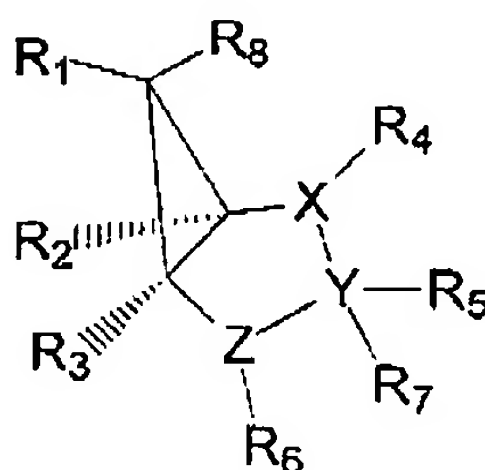


In the Claims

Claim 1 (Currently Amended): A chemical compound comprising the formula:



wherein R₁ is a moiety selected from the group consisting of R₉, CH₃, alkyl groups, substituted alkyl groups, halogen, carboxyl, hydroxyl, phosphate, phosphonate, sugar residues, sugars, aryl, nucleosides, nucleoside monophosphates, nucleoside diphosphates, nucleoside triphosphates, and hydrogen;

R₂ is a moiety selected from the group consisting of R₉, CH₃, alkyl groups, substituted alkyl groups, halogen, carboxyl, hydroxyl, phosphate, phosphonate, sugar residues, sugars, aryl, nucleosides, nucleoside monophosphates, nucleoside diphosphates, nucleoside triphosphates, and hydrogen;

R₃ is a moiety selected from the group consisting of R₉, CH₃, alkyl groups, substituted alkyl groups, halogen, carboxyl, hydroxyl, phosphate, phosphonate, sugar residues, sugars, aryl, nucleosides, nucleoside monophosphates, nucleoside diphosphates, nucleoside triphosphates, and hydrogen;

R₄ is a moiety selected from the group consisting of R₉, CH₃, alkyl groups, substituted alkyl groups, halogen, carboxyl, hydroxyl, phosphate, phosphonate, sugar residues, sugars, aryl, nucleosides, nucleoside monophosphates, nucleoside diphosphates, nucleoside triphosphates, and hydrogen;

R₅ is a moiety selected from the group consisting of R₉, CH₃, alkyl groups, substituted alkyl groups, halogen, carboxyl, hydroxyl, phosphate, phosphonate, sugar residues, sugars, aryl,

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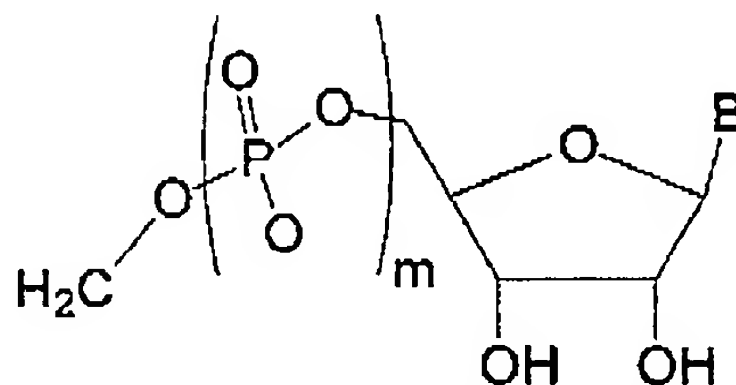
nucleosides, nucleoside monophosphates, nucleoside diphosphates, nucleoside triphosphates, and hydrogen;

R₆ is a moiety selected from the group consisting of R₉, CH₃, alkyl groups, substituted alkyl groups, halogen, carboxyl, hydroxyl, phosphate, phosphonate, sugar residues, sugars, aryl, nucleosides, nucleoside monophosphates, nucleoside diphosphates, nucleoside triphosphates, and hydrogen;

R₇ is a moiety selected from the group consisting of R₉, CH₃, alkyl groups, substituted alkyl groups, halogen, carboxyl, hydroxyl, phosphate, phosphonate, sugar residues, sugars, aryl, nucleosides, nucleoside monophosphates, nucleoside diphosphates, nucleoside triphosphates, and hydrogen;

R₈ is a moiety selected from the group consisting of R₉, substituted alkyl groups, hydroxyl, phosphate, phosphonate, sugar residues, sugars, nucleosides, nucleoside monophosphates, nucleoside diphosphates, and nucleoside triphosphates;

R₉ is



wherein B is adenine, thymine, guanine, cytosine, uracil, nicotinamide, or analogs thereof;
m is 1 or 2;

X, Y, and Z are carbon, nitrogen, oxygen, or sulfur and a double bond may, optionally, exist between atoms X and Y or atoms Y and Z; and
salts or isolated enantiomers of said chemical compound.

Claim 2 (Previously Presented): The chemical compound according to claim 1, wherein said substituted alkyl groups are substituted with a moiety selected from the group consisting of C₁₋₆ alkyl, halogen, CN, OH, COOH, NO₂, NH₂, SO₂₋₄, C₁₋₂₀ heteroalkyl, C₂₋₂₀ alkenyl, alkynyl, alkynyl-aryl, alkynyl-heteroaryl, aryl, C₁₋₂₀ alkyl-aryl, C₂₋₂₀ alkenyl-aryl, heteroaryl, C₁₋₂₀ alkyl-heteroaryl,

C₂₋₂₀ alkenyl-heteroaryl, cycloalkyl, heterocycloalkyl, C₁₋₂₀ alkyl-heterocycloalkyl, and C₁₋₂₀ alkyl-cycloalkyl, any of which may be optionally, substituted with a moiety selected from the group consisting of C₁₋₆ alkyl, halogen, OH, NH₂, CN, NO₂, COOH, and SO₂₋₄.

Claim 3 (Previously Presented): The chemical compound according to claim 1, wherein said salt is a hydrochloride, hydrobromide, p-toluenesulfonate, phosphate, sulfate, perchlorate, acetate, trifluoroacetate, propionate, citrate, malonate, succinate, lactate, oxalate, tartrate, benzoate, magnesium, calcium, morpholine, piperidine, dimethylamine, or diethylamine salt.

Claim 4 (Original): The chemical compound according to claim 1, wherein said isolated enantiomeric forms of the chemical compound are substantially free from one another.

Claim 5 (Original): The chemical compound according to claim 4, wherein said isolated enantiomeric forms of said chemical compound is at least about in 90%, 95%, 97.5%, or 99% enantiomeric excess.

Claims 6-20 (Canceled).

Claim 21 (Previously Presented): The compound according to claim 1, wherein R₂ or R₃ is a substituted alkyl group.

Claim 22 (Previously Presented): The compound according to claim 21, wherein the substituted alkyl group is substituted with hydroxyl at any available position.

Claim 23 (Previously Presented): The compound according to claim 1, wherein R₈ is R₉.

Claim 24 (Previously Presented): The compound according to claim 1, wherein R₈ is hydroxyl.

Claim 25 (Previously Presented): The compound according to claim 1, wherein R₈ is phosphate.

Claim 26 (Previously Presented): The compound according to claim 1, wherein R_8 is a phosphonate.

Claim 27 (Previously Presented): The compound according to claim 1, wherein R_8 is a sugar residue.

Claim 28 (Previously Presented): The compound according to claim 1, wherein R_8 is a sugar.

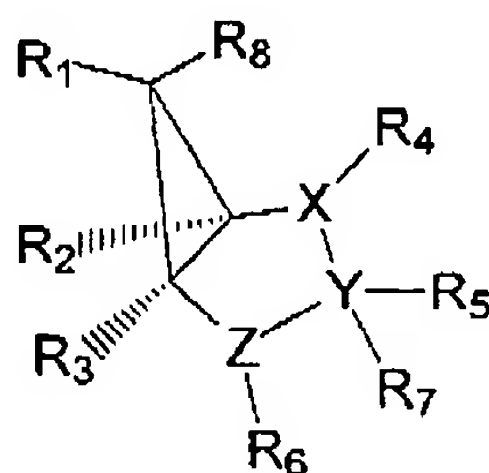
Claim 29 (Previously Presented): The compound according to claim 1, wherein R_8 is a nucleoside.

Claim 30 (Previously Presented): The compound according to claim 1, wherein R_8 is a nucleoside monophosphate.

Claim 31 (Previously Presented): The compound according to claim 1, wherein R_8 is nucleoside diphosphate.

Claim 32 (Previously Presented): The compound according to claim 1, wherein R_8 is nucleoside triphosphate.

Claim 33 (Currently Amended): A composition comprising a carrier and a chemical compound, wherein the chemical compound comprises the formula:



wherein R_1 is a moiety selected from the group consisting of R_9 , CH_3 , alkyl groups,

substituted alkyl groups, halogen, carboxyl, hydroxyl, phosphate, phosphonate, sugar residues, sugars, aryl, nucleosides, nucleoside monophosphates, nucleoside diphosphates, nucleoside triphosphates, and hydrogen;

R₂ is a moiety selected from the group consisting of R₉, CH₃, alkyl groups, substituted alkyl groups, halogen, carboxyl, hydroxyl, phosphate, phosphonate, sugar residues, sugars, aryl, nucleosides, nucleoside monophosphates, nucleoside diphosphates, nucleoside triphosphates, and hydrogen;

R₃ is a moiety selected from the group consisting of R₉, CH₃, alkyl groups, substituted alkyl groups, halogen, carboxyl, hydroxyl, phosphate, phosphonate, sugar residues, sugars, aryl, nucleosides, nucleoside monophosphates, nucleoside diphosphates, nucleoside triphosphates, and hydrogen;

R₄ is a moiety selected from the group consisting of R₉, CH₃, alkyl groups, substituted alkyl groups, halogen, carboxyl, hydroxyl, phosphate, phosphonate, sugar residues, sugars, aryl, nucleosides, nucleoside monophosphates, nucleoside diphosphates, nucleoside triphosphates, and hydrogen;

R₅ is a moiety selected from the group consisting of R₉, CH₃, alkyl groups, substituted alkyl groups, halogen, carboxyl, hydroxyl, phosphate, phosphonate, sugar residues, sugars, aryl, nucleosides, nucleoside monophosphates, nucleoside diphosphates, nucleoside triphosphates, and hydrogen;

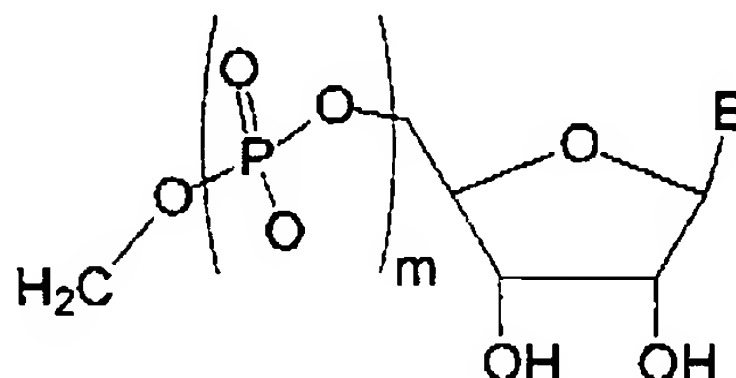
R₆ is a moiety selected from the group consisting of R₉, CH₃, alkyl groups, substituted alkyl groups, halogen, carboxyl, hydroxyl, phosphate, phosphonate, sugar residues, sugars, aryl, nucleosides, nucleoside monophosphates, nucleoside diphosphates, nucleoside triphosphates, and hydrogen;

R₇ is a moiety selected from the group consisting of R₉, CH₃, alkyl groups, substituted alkyl groups, halogen, carboxyl, hydroxyl, phosphate, phosphonate, sugar residues, sugars, aryl, nucleosides, nucleoside monophosphates, nucleoside diphosphates, nucleoside triphosphates, and hydrogen;

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R₈ is a moiety selected from the group consisting of R₉, substituted alkyl groups, hydroxyl, phosphate, phosphonate, sugar residues, sugars, nucleosides, nucleoside monophosphates, nucleoside diphosphates, and nucleoside triphosphates;

R₉ is



wherein B is adenine, thymine, guanine, cytosine, uracil, nicotinamide, or analogs thereof;
m is 1 or 2;

X, Y, and Z are carbon, nitrogen, oxygen, or sulfur and a double bond may, optionally, exist between atoms X and Y or atoms Y and Z; and
salts or isolated enantiomers of said chemical compound.

Claim 34 (Previously Presented): The composition according to claim 33, wherein said substituted alkyl groups are substituted with a moiety selected from the group consisting of C₁₋₆ alkyl, halogen, CN, OH, COOH, NO₂, NH₂, SO₂₋₄, C₁₋₂₀ heteroalkyl, C₂₋₂₀ alkenyl, alkynyl, alkynyl-aryl, alkynyl-heteroaryl, aryl, C₁₋₂₀ alkyl-aryl, C₂₋₂₀ alkenyl-aryl, heteroaryl, C₁₋₂₀ alkyl-heteroaryl, C₂₋₂₀ alkenyl-heteroaryl, cycloalkyl, heterocycloalkyl, C₁₋₂₀ alkyl-heterocycloalkyl, and C₁₋₂₀ alkyl-cycloalkyl, any of which may be optionally, substituted with a moiety selected from the group consisting of C₁₋₆ alkyl, halogen, OH, NH₂, CN, NO₂, COOH, and SO₂₋₄.

Claim 35 (Previously Presented): The composition according to claim 33, wherein said salt is a hydrochloride, hydrobromide, p-toluenesulfonate, phosphate, sulfate, perchlorate, acetate, trifluoroacetate, propionate, citrate, malonate, succinate, lactate, oxalate, tartrate, benzoate, magnesium, calcium, morpholine, piperidine, dimethylamine, or diethylamine salt.

Claim 36 (Previously Presented): The composition according to claim 33, wherein said isolated enantiomeric forms of the chemical compound are substantially free from one another.

Claim 37 (Previously Presented): The composition according to claim 33, wherein said isolated enantiomeric forms of said chemical compound is at least about in 90%, 95%, 97.5%, or 99% enantiomeric excess.

Claim 38 (Previously Presented): The composition according to claim 33, wherein R_2 or R_3 is a substituted alkyl group.

Claim 39 (Previously Presented): The composition according to claim 38, wherein the substituted alkyl group is substituted with hydroxyl at any available position.

Claim 40 (Previously Presented): The composition according to claim 33, wherein R_8 is R_9 .

Claim 41 (Previously Presented): The composition according to claim 33, wherein R_8 is hydroxyl.

Claim 42 (Previously Presented): The compound according to claim 33, wherein R_8 is phosphate.

Claim 43 (Previously Presented): The composition compound according to claim 33, wherein R_8 is phosphonate.

Claim 44 (Previously Presented): The composition according to claim 33, wherein R_8 is a sugar residue.

Claim 45 (Previously Presented): The composition according to claim 33, wherein R_8 is a sugar.

Claim 46 (Previously Presented): The composition according to claim 33, wherein R_8 is a nucleoside.

Claim 47 (Previously Presented): The composition according to claim 33, wherein R_8 is a nucleoside monophosphate.

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Claim 48 (Previously Presented): The composition according to claim 33, wherein R_8 is a nucleoside diphosphate.

Claim 49 (Previously Presented): The composition according to claim 33, wherein R_8 is a nucleoside triphosphate.

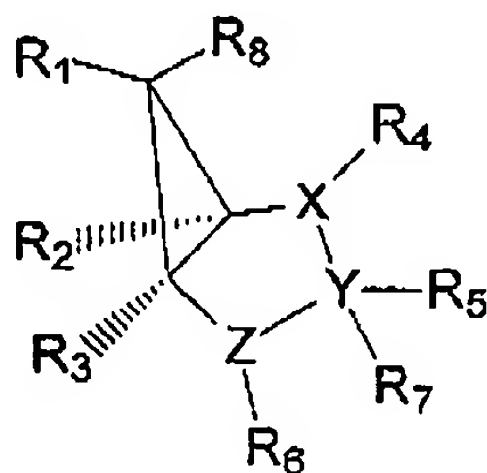
Claim 50 (Previously Presented): The composition according to claim 33, wherein said carrier is a pharmaceutical carrier.

Claim 51 (Previously Presented): The composition according to claim 50, wherein said pharmaceutical carrier is solid, liquid, or aerosol.

Claim 52 (Previously Presented): The composition according to claim 33, wherein said composition is in unit dose form.

Claim 53 (Previously Presented): The composition according to claim 33, wherein said carrier is a powder, tablet, pill, capsule, cachet, suppository, or dispersible granule.

Claim 54 (Currently Amended): A method of suppressing, reducing, or inhibiting glycosyltransferase or glycosylhydrolase activity comprising contacting said glycosyltransferase or glycosylhydrolase with a composition, in an amount sufficient to suppress, reduce, or inhibit said glycosyltransferase or glycosyltransferase activity, comprising a carrier and a chemical compound, wherein the chemical compound comprises the formula



wherein R_1 is a moiety selected from the group consisting of R_9 , CH_3 , alkyl groups,

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substituted alkyl groups, halogen, carboxyl, hydroxyl, phosphate, phosphonate, sugar residues, sugars, aryl, nucleosides, nucleoside monophosphates, nucleoside diphosphates, nucleoside triphosphates, and hydrogen;

R₂ is a moiety selected from the group consisting of R₉, CH₃, alkyl groups, substituted alkyl groups, halogen, carboxyl, hydroxyl, phosphate, phosphonate, sugar residues, sugars, aryl, nucleosides, nucleoside monophosphates, nucleoside diphosphates, nucleoside triphosphates, and hydrogen;

R₃ is a moiety selected from the group consisting of R₉, CH₃, alkyl groups, substituted alkyl groups, halogen, carboxyl, hydroxyl, phosphate, phosphonate, sugar residues, sugars, aryl, nucleosides, nucleoside monophosphates, nucleoside diphosphates, nucleoside triphosphates, and hydrogen;

R₄ is a moiety selected from the group consisting of R₉, CH₃, alkyl groups, substituted alkyl groups, halogen, carboxyl, hydroxyl, phosphate, phosphonate, sugar residues, sugars, aryl, nucleosides, nucleoside monophosphates, nucleoside diphosphates, nucleoside triphosphates, and hydrogen;

R₅ is a moiety selected from the group consisting of R₉, CH₃, alkyl groups, substituted alkyl groups, halogen, carboxyl, hydroxyl, phosphate, phosphonate, sugar residues, sugars, aryl, nucleosides, nucleoside monophosphates, nucleoside diphosphates, nucleoside triphosphates, and hydrogen;

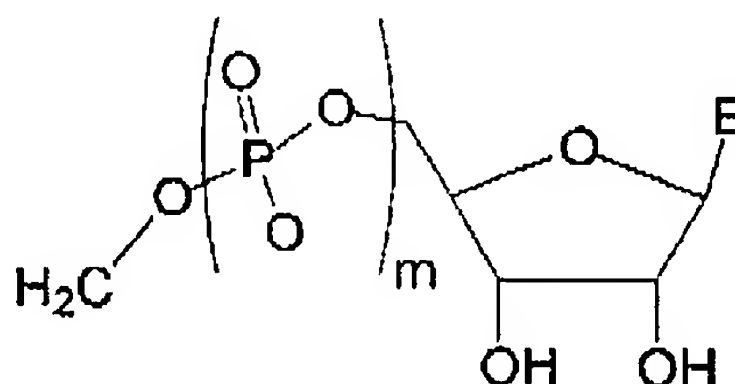
R₆ is a moiety selected from the group consisting of R₉, CH₃, alkyl groups, substituted alkyl groups, halogen, carboxyl, hydroxyl, phosphate, phosphonate, sugar residues, sugars, aryl, nucleosides, nucleoside monophosphates, nucleoside diphosphates, nucleoside triphosphates, and hydrogen;

R₇ is a moiety selected from the group consisting of R₉, CH₃, alkyl groups, substituted alkyl groups, halogen, carboxyl, hydroxyl, phosphate, phosphonate, sugar residues, sugars, aryl, nucleosides, nucleoside monophosphates, nucleoside diphosphates, nucleoside triphosphates, and hydrogen;

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R₈ is a moiety selected from the group consisting of R₉, substituted alkyl groups, hydroxyl, phosphate, phosphonate, sugar residues, sugars, nucleosides, nucleoside monophosphates, nucleoside diphosphates, and nucleoside triphosphates;

R₉ is



wherein B is adenine, thymine, guanine, cytosine, uracil, nicotinamide, or analogs thereof;
m is 1 or 2;

X, Y, and Z are carbon, nitrogen, oxygen, or sulfur and a double bond may, optionally, exist between atoms X and Y or atoms Y and Z; and

salts or isolated enantiomers of said chemical compound.

Claim 55 (Previously Presented): The method according to claim 54, wherein said substituted alkyl groups are substituted with a moiety selected from the group consisting of C₁₋₆ alkyl, halogen, CN, OH, COOH, NO₂, NH₂, SO₂₋₄, C₁₋₂₀ heteroalkyl, C₂₋₂₀ alkenyl, alkynyl, alkynyl-aryl, alkynyl-heteroaryl, aryl, C₁₋₂₀ alkyl-aryl, C₂₋₂₀ alkenyl-aryl, heteroaryl, C₁₋₂₀ alkyl-heteroaryl, C₂₋₂₀ alkenyl-heteroaryl, cycloalkyl, heterocycloalkyl, C₁₋₂₀ alkyl-heterocycloalkyl, and C₁₋₂₀ alkyl-cycloalkyl, any of which may be optionally, substituted with a moiety selected from the group consisting of C₁₋₆ alkyl, halogen, OH, NH₂, CN, NO₂, COOH, and SO₂₋₄.

Claim 56 (Previously Presented): The method according to claim 54, wherein said salt is a hydrochloride, hydrobromide, p-toluenesulfonate, phosphate, sulfate, perchlorate, acetate, trifluoroacetate, propionate, citrate, malonate, succinate, lactate, oxalate, tartrate, benzoate, magnesium, calcium, morpholine, piperidine, dimethylamine, or diethylamine salt.

Claim 57 (Previously Presented): The method according to claim 54, wherein said isolated enantiomeric forms of the chemical compound are substantially free from one another.

Claim 58 (Previously Presented): The method according to claim 57, wherein said isolated enantiomeric forms of said chemical compound is at least about in 90%, 95%, 97.5%, or 99% enantiomeric excess.

Claim 59 (Previously Presented): The method according to claim 54, wherein R_2 or R_3 is a substituted alkyl group.

Claim 60 (Previously Presented): The method according to claim 59, wherein the substituted alkyl group is substituted with hydroxyl at any available position.

Claim 61 (Previously Presented): The method according to claim 54, wherein R_8 is R_9 .

Claim 62 (Previously Presented): The method according to claim 54, wherein R_8 is hydroxyl.

Claim 63 (Previously Presented): The method according to claim 54, wherein R_8 is phosphate.

Claim 64 (Previously Presented): The method according to claim 54, wherein R_8 is phosphonate.

Claim 65 (Previously Presented): The method according to claim 54, wherein R_8 is a sugar residue.

Claim 66 (Previously Presented): The method according to claim 54, wherein R_8 is a sugar.

Claim 67 (Previously Presented): The method according to claim 54, wherein R_8 is a nucleoside.

Claim 68 (Previously Presented): The method according to claim 54, wherein R_8 is a nucleoside monophosphate.

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Claim 69 (Previously Presented): The method according to claim 54, wherein R_8 is a nucleoside diphosphate.

Claim 70 (Previously Presented): The method according to claim 54, wherein R_8 is a nucleoside triphosphate.

Claim 71 (Previously Presented): The method according to claim 54, wherein said suppression, reduction or inhibition of said glycotransferase or glycohydrolase activity provides therapeutic relief.

Claim 72 (New): The compound according to claim 1, wherein R_8 is a substituted alkyl group.

Claim 73 (New): The composition according to claim 33, wherein R_8 is a substituted alkyl group.

Claim 74 (New): The method according to claim 54, wherein R_8 is a substituted alkyl group.